

Amendments to the Specification

Please amend the following paragraphs as shown below:

[0021] Fig. 4A is a perspective view of a second embodiment according to the invention comprising an air hammer ~~bit~~housing for converting an air hammer to a pneumatic percussive pulling tool.

[0022] Fig. 4B is a top plan view of the air hammer ~~bit~~housing of Fig. 4A.

[0045] Referring to Figs. 5A-5C, a pulling bit 86 is an irregularly-shaped body comprising a retaining flange 108, a rod portion 110, and a hammer portion 112. The retaining flange 108 is adapted to rigidly connect the pulling bit 86 to a hammer rod 106 as shown in Figs. 5A and 7. The rod portion 110 is a generally rod-like member axially aligned with the retaining flange 108, in axial alignment with the hammer rod 106. The hammer portion 112 comprises a hammer 114 rigidly connected in a longitudinal direction to a flange 116 which is in turn rigidly connected to the rod portion 110 extending laterally therefrom. The hammer 114 is a generally cylindrical collar-like body having an aperture 118 therethrough. A conventional return spring 97 retains the pulling bit 86 to the air hammer 88 in a well-known manner.

[0046] Referring to Fig. 6, a ~~tool~~pull rod 120 is an elongated rod like member adapted to be slidably inserted through the apertures 105 and 118, and attached through suitable means at a first end 122 to the fitting to be removed (not shown). A second end 124 of the ~~tool~~pull rod 120 terminates in a circular flange 126 having a diameter somewhat greater than the diameter of the ~~tool~~pull rod 120. The flange 126 is adapted to bear against the hammer 114. Or, alternatively, a common, manual slide-hammer rod can be used without departing from the scope of this invention.

[0047] Referring to Figs. 6 and 7, the air hammer housing 80 is assembled to an air hammer 88 by inserting the air hammer 88 into the air hammer housing 80 so that the air hammer handle extends through the handle cutout 94. The arcuate band 98 is attached to the sleeve portion 82 so that the air hammer 88 is forcibly held against the stop blocks 95 by the arcuate band 98. The pulling bit 86 is attached to the hammer rod 106 through the retaining flange 108 so that the pulling bit 86 extends through the upper slot 92. The pull rod support assembly 84 is attached to the sleeve portion 82 so that the aperture 118 is axially aligned with the aperture 105. The ~~tool~~pull rod 120 is first inserted through the aperture 118 followed by the aperture 105, and the first end 122 is rigidly attached to the fitting to be removed. The assembly is then brought toward the second end 124 of the ~~tool~~pull rod 120 so that the flange 126 bears against the hammer 114. The air hammer 88 is

actuated so that the hammer 114 repeatedly strikes the flange 126, transmitting a percussive pulling force to the fitting and thereby removing the fitting.

- [0056] Looking at Figs. 11 and 12, the air ~~gun~~-hammer 88 is typically provided with a hammer bit 196 terminating at one end in an anvil 198. The air hammer 88 is also provided with a coil spring 200 which is adapted to be threaded onto a threaded spring mount 202 extending coaxially from the end of the cylinder 182. An aperture 184 extends through the threaded spring mount 202 to communicate with the chamber 186. The bit 196 is attached to the cylinder 182 by inserting the anvil 198 through the aperture 184 and threading the coil spring 200 onto the threaded spring mount 202. The coil spring 200 and the hammer bit 196 are adapted for cooperative communication so that the spring 200 retains the anvil 198 in the aperture 184 while allowing slidable movement of the hammer bit 196 relative to the cylinder 182. As the piston 188 is urged by the compressed air to strike the anvil 198, the hammer bit 196 will be driven away from the cylinder 182. However, the spring 200 will extend with the movement of the hammer bit 196 and will prevent the hammer bit 196 from being expelled from the air ~~gun~~-hammer 88, in a well-known manner.
- [0057] Referring again to Figs. 10 and 13, a pull cap 180 is a generally cylindrical-shaped body having an annular wall 194 at one end and a cylindrical anvil post 190 extending coaxially relative to the annular wall 194. The annular space between the annular wall 194 and the anvil post 190 is provided with cap threads 204 adapted for threadable communication with the threaded spring mount 202. Additionally, set screws can be used to secure the pull cap 180 to the spring mount. The cap 180 is threaded onto the cylinder 182 so that the anvil post 190 extends through the aperture 184 into the chamber 186, and the cap 180 will be fixedly attached to the cylinder 182. When the piston 188 strikes the anvil post 190, the impact will be transmitted through the cap 180 to the cylinder 182 and the body of the air hammer 88.
- [0058] The butt end of the air hammer 88 is modified with a seat 61 for attachment of the pull rod 58 thereto. Preferably, the seat 61 is threaded and the pull rod 58 is attached by threading a threaded stud 59 therein. The fitting 60 is fixedly attached to the tool assembly 64 as previously described. Thus, percussive force applied to the body of the air hammer 88 will be transmitted to the pull rod 58 and the tool assembly 64 (i.e., the fitting to be removed) for removal of the tool assembly 64 from its seat. Alternatively, the seat 61 can be adapted for attachment of the pull rod 58 in a well-known manner through a collar and one or more radially-oriented set screws, or a bayonet-type connection.

Serial No. 10/604,083
Filed: June 25, 2003
Page 4 of 17

Examiner: John C. Hong
Group Art Unit: 3726

[0059] The unique invention described herein is easy to assemble and use. In the embodiments shown herein, the invention provides a way to use an existing air hammer as a pulling tool and, in other embodiments, a new-style air hammer body and attachments are shown that provide a way by which an air hammer can be easily used as a pulling tool. The invention requires only a single supply of readily available pressurized air. The invention eliminates the manual effort and impact stresses to the operator resulting from the use of the prior art ~~removerspullers~~, thus minimizing fatigue and injury to the operator. With the easily-assembled, hand-held assembly, fittings can be quickly ~~removed~~pulled, thereby minimizing downtime and improving productivity.